

**To:** Matt Francis[m.francis@erllc.com]; Ben Kneller[Ben@APTecUSA.com]  
**Cc:** Petri, Elliott[Elliott.Petri@WestonSolutions.com]; Dale Kneller[Dale@APTecUSA.com]; Way, Steven[way.steven@epa.gov]; Keith Moore[MooreK@APTecUSA.com]  
**From:** Eric Anderson  
**Sent:** Thur 9/10/2015 6:35:47 PM  
**Subject:** RE: Gold King

Matt,

We are not currently able to find a 6" wye that will meet the required pressure rating (SDR 7) for the one cleanout above the valve cluster. They do have fabricated SDR7 wyes however they are de-rated after "fabrication" and we can only find molded wyes up to DR11. So I see 2 options here.

1. We can install this cleanout below the valve cluster but facing upstream (basically making the upper Gladstone CO a double) and in order for it to be able to clean upstream the Gladstone gate valve would have to be open.
2. We can install this cleanout above the valve cluster by adapting to an epoxy coated ductile iron wye and then back to HDPE. This option would be all restrained.

Our preference would be the first option. What is your opinion?

Thanks, Eric

**From:** Eric Anderson  
**Sent:** Thursday, September 10, 2015 10:28 AM  
**To:** 'Matt Francis' <m.francis@erllc.com>; Ben Kneller <Ben@APTecUSA.com>  
**Cc:** Petri, Elliott <Elliott.Petri@WestonSolutions.com>; Dale Kneller <Dale@APTecUSA.com>; Way, Steven <way.steven@epa.gov>; Keith Moore <MooreK@APTecUSA.com>  
**Subject:** RE: Gold King

OK.

- 1) AirVac size, 1"? I anticipate 3ea at the top of each section. They will be buried and placed in small vaults and insulated for frost protection.

2) Cleanout Port size, 4"?, 6"? I anticipate 4ea, one for each run near the wye and on at the midway point on the Gladstone Run. On the mid-line CO I assume you want "Double Cleanout" to be able to flush in both directions, correct?

We are putting it together now.

Eric

**From:** Matt Francis [<mailto:m.francis@erllc.com>]  
**Sent:** Thursday, September 10, 2015 9:41 AM  
**To:** Eric Anderson <[Eric@APTecUSA.com](mailto:Eric@APTecUSA.com)>; Ben Kneller <[Ben@APTecUSA.com](mailto:Ben@APTecUSA.com)>  
**Cc:** Petri, Elliott <[Elliott.Petri@WestonSolutions.com](mailto:Elliott.Petri@WestonSolutions.com)>; Dale Kneller <[Dale@APTecUSA.com](mailto:Dale@APTecUSA.com)>; Way, Steven <[way.steven@epa.gov](mailto:way.steven@epa.gov)>  
**Subject:** RE: Gold King

Thanks. Sounds like to alleviate all concerns, we would like to bump that section up to 8". Additionally, we would like the following incorporated:

- 1) Air valves located necessary in each segment to prevent air pockets/vacuum
- 2) Clean out ports at a minimum of one just above the wye, one on the Red and Bonita line and one every 1000' +/- on the Gladstone route. All need to be located to be accessible by a jet rodder truck.

With the above changes, we'll be looking at just doing a single line of each segment. Let me know how this changes schedule and pricing.

Thanks

Matt

**From:** Eric Anderson [<mailto:Eric@APTecUSA.com>]  
**Sent:** Wednesday, September 09, 2015 3:56 PM  
**To:** Matt Francis <[m.francis@erllc.com](mailto:m.francis@erllc.com)>; Ben Kneller <[Ben@APTecUSA.com](mailto:Ben@APTecUSA.com)>  
**Cc:** Petri, Elliott <[Elliott.Petri@WestonSolutions.com](mailto:Elliott.Petri@WestonSolutions.com)>; Dale Kneller <[Dale@APTecUSA.com](mailto:Dale@APTecUSA.com)>  
**Subject:** RE: Gold King

Matt,

There is sufficient head in the system for the line to carry 1000GPM to Gladstone.

- From the laydown area to Gladstone there is approximately 280ft of drop (= 120psi of Head )
- Length from Laydown to Gladstone is approx. 2100ft

the first 2 attached sheets show the flow and line loss from the laydown to Gladstone.

- Considering a flat (no elevation loss/ gain) pipeline (6in DR11) at 1000 GPM there would be 90psi of pressure loss.
- Considering a flat (no elevation loss/ gain) pipeline (6in DR11) at 600 GPM there would be 35psi of pressure loss.

In the 3<sup>rd</sup> sheet we can see the potential of the gravity flow in that area considering

- A 5% slope the 6in DR11 pipe is capable of 600 GPM(Gravity flow 0 psi)
- However the average grade from Laydown to Gladstone is >13%

Additionally there is the potential of over 250 psi of head from the upper sections to maintain the flow.

Regards,

Eric Anderson

General Manager



**From:** Eric Anderson  
**Sent:** Wednesday, September 9, 2015 1:49 PM  
**To:** 'Matt Francis' <m.francis@erllc.com>; Ben Kneller <Ben@APTecUSA.com>  
**Cc:** Petri, Elliott <Elliott.Petri@WestonSolutions.com>  
**Subject:** RE: Gold King

Matt

We do have the flow calculations and will get them to you today as soon as Ben returns to the office.

Eric

**From:** Matt Francis [mailto:m.francis@erllc.com]  
**Sent:** Wednesday, September 9, 2015 1:21 PM  
**To:** Ben Kneller <Ben@APTecUSA.com>; Eric Anderson <Eric@APTecUSA.com>  
**Cc:** Petri, Elliott <Elliott.Petri@WestonSolutions.com>  
**Subject:** Gold King

We're getting closer to having everything resolved to move forward with the Gold King pipe project. One thing that has come up is the need for a calculation showing that the 6" line from the laydown area to Gladstone is capable of handling required flow rates.

With the elevation and routing information you have, can you provide a maximum flow rate for that section of the system? If you need additional information, please let me know and I'll try to assist.

Thanks

Matt Francis

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